

## Letter from Alexander Graham Bell to Gardiner Greene Hubbard, July 7, 1875, with transcript

Letter from G. Alexander Graham Bell to Mr. Gardiner G. Hubbard. Salem, Massachusetts. July 7th, 1875. Dear Mr. Hubbard:

I forgot to mention this evening — the gratifying results obtained with the steel reed.

When three cells of a battery were introduced into the circuit — the armature of the Receiving Instrument vibrated with considerable amplitude. When a damper was adjusted for it to strike against the sound could be heard at a distance from the instrument.

The helix at Transmitting end had a resistance of about two ohms — and yet the vibration of the armature of the Receiving Instrument — could be detected when a resistance of 100 ohms was introduced into the circuit.

This seems to me to indicate more power than can possibly be due to magneto-electric currents generated by the vibration of the reed.

May not a pulsatory action be induced in the voltaic current itself by the motion of the reed?

I can imagine the current alternately weakened and strengthened according to the distance of the armature from the pole underneath.

In this case — the pulsations would certainly be available for our purpose — by merely increasing the battery power — sufficiently to overcome the resistance of the line.

Magneto-electric currents are, however, evidently present — for a sound is perceptible at the Receiving end when the battery is omitted altogether.

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I think also that the effects are in some way dependent upon the peculiar form of electro-magnet employed.

I hope to get some light on the subject from Moncel. He devotes several pages to the discussion of peculiarities observed in the one-legged or “lame” magnet (boiteux) — shown in his work as follows. He says “Ce genre d'electro-aimant, que ‘ar beaucoup'etudie’ et le premier employe’ dnas les applications electriques a beaucoup d'avantages dont nous parleront plus tard et une force beaucoup plus considerable qu'on ne semblerait le croire a premier vue.”

I was very sorry to observe how feeble Mrs. McCurdy seemed to be this evening. I trust that a day or two 's rest may restore her to health.

With kind regards.

Yours respectfully, A. Graham Bell.